CLAIM LISTING

This listing of claims will replace all prior versions, and listings of claims in the application:

AMENDMENTS TO THE CLAIMS

1. (Previously Presented) A BE-ZFE (Bit-Edge Zero Forcing Equalizer) that comprises:

a filter tap coefficient module that provides a plurality of filter tap coefficients;

a filter that includes a plurality of filter taps such that each filter tap is adjusted according to one filter tap coefficient of the plurality of filter tap coefficients; [[and]]

wherein the filter is enabled to modify a pulse in a communication channel, wherein the modified pulse is located within a sequence of bit periods;

wherein the modified pulse has zero crossings located substantially at bit edges of each bit period within the sequence of bit periods except those bit edges immediately adjacent to a bit period in which the pulse is substantially located: and

wherein the filter tap coefficient module employs an inverse of a communication channel transfer function and a pulse mapping to calculate the plurality of filter tap coefficients.

2. (Original) The BE-ZFE of claim 1, wherein:

the filter tap coefficient module calculates the plurality of filter tap coefficients in real time based on currently updated characteristic information of the communication channel that communicatively couples a transmitter and a receiver.

3. (Original) The BE-ZFE of claim 1, wherein:

the filter tap coefficient module calculates the plurality of filter tap coefficients offline based on predetermined characteristic information of the communication channel that communicatively couples a transmitter and a receiver.

Claim 4. (Cancelled)

5. (Original) The BE-ZFE of claim 1, wherein:

a sum of absolute values of each filter tap coefficient of the plurality of filter tap coefficients is substantially equal to one.

6. (Original) The BE-ZFE of claim 1, wherein:

the modified pulse substantially minimizes ISI (Inter-Symbol Interference) at bit edges of each bit period within the sequence of bit periods except those bit edges immediately adjacent to the bit period in which the pulse is substantially located; and

the modified pulse allows a portion of ISI to exist at bit centers of each bit period within the sequence of bit periods except the bit period in which the pulse is substantially located.

7. (Original) The BE-ZFE of claim 1, wherein:

the plurality of filter taps includes 3 filter taps; and

the plurality of filter tap coefficients includes 3 corresponding filter tap coefficients.

8. (Original) The BE-ZFE of claim 1, wherein:

the filter is implemented within a transmitter that is communicatively coupled to a receiver via the communication channel.

9. (Original) The BE-ZFE of claim 1, wherein:

the filter is implemented within a receiver that is communicatively coupled to a transmitter via the communication channel.

10. (Original) The BE-ZFE of claim 1, wherein:

the filter is implemented in a distributed manner part in a transmitter and part in a receiver; and

the transmitter and the receiver are communicatively coupled via the communication channel.

11. (Previously Presented) A method for performing equalization on a data signal, the method comprising:

receiving a plurality of filter tap coefficients;

shaping a pulse that is substantially located within a bit period to a modified pulse that is located within a sequence of bit periods using the plurality of filter tap coefficients;

wherein the modified pulse has zero crossings located substantially at bit edges of each bit period within the sequence of bit periods except those bit edges immediately adjacent to the bit period in which the pulse is substantially located; and

wherein the modified pulse substantially minimizes ISI (Inter-Symbol Interference) at bit edges of each bit period within the sequence of bit periods except those bit edges immediately adjacent to the bit period in which the pulse is substantially located .

Claim 12. (Cancelled)

13. (Original) The method of claim 11, further comprising:

calculating the plurality of filter tap coefficients in real time based on currently updated characteristic information of a communication channel that communicatively couples a transmitter and a receiver.

14. (Original) The method of claim 11, further comprising:

calculating the plurality of filter tap coefficients offline based on predetermined characteristic information of a communication channel that communicatively couples a transmitter and a receiver.

15. (Original) The method of claim 11, wherein:

a sum of absolute values of each filter tap coefficient of the plurality of filter tap coefficients is substantially equal to one.

16. (Previously Presented) A method for performing equalization on a data signal according to Bit-Edge Zero Forcing Equalization, the method comprising:

receiving a plurality of BE-ZFE (Bit-Edge Zero Forcing Equalizer) filter tap coefficients;

shaping a pulse that is substantially located within a bit period that is located within a sequence of bit periods using the plurality of BE-ZFE filter tap coefficients; and

wherein the shaping of the pulse results in a modified pulse that has zero crossings located substantially at bit edges within the sequence of bit periods.

17. (Previously Presented) The method of claim 16, wherein the bit edges are not those bit edges immediately adjacent to the bit period in which the pulse is substantially located.

18. (Original) The method of claim 16, wherein:

the modified pulse substantially minimizes ISI (Inter-Symbol Interference) at bit edges of each bit period within the sequence of bit periods.

19. (Original) The method of claim 16, further comprising:

calculating the plurality of BE-ZFE filter tap coefficients in real time based on currently updated characteristic information of a communication channel that communicatively couples a transmitter and a receiver.

20. (Original) The method of claim 16, further comprising:

calculating the plurality of BE-ZFE filter tap coefficients offline based on predetermined characteristic information of a communication channel that communicatively couples a transmitter and a receiver.